RADBOUD UNIVERSITY

Nijmegen School of Management

Master's Thesis Economics

Gender diversity in the board of directors

Gender diversity, ownership, and firm performance in China

Student: Lotte Schut

Student number: s4503325

Supervisor: Dr. K. Burzynska

Master's Thesis Financial Economics

Radboud University Nijmegen

Nijmegen, 15th of August 2019

Abstract

This study examines the relationship between board gender diversity and firm performance, and the moderating influence of private ownership on this relation. Previous research on board gender diversity and firm performance is increasing, but shows contradicting evidence. This paper provides new insights on board gender diversity and firm performance, by adding empirical evidence of a developing economy to the existing literature. This study uses a panel data set on all Chinese listed firms covering a period from 2008 to 2017. A fixed effects regression, in which is controlled for non-varying firm-specific factors, is employed to test the relationship. Moreover there is tested for reverse causality. The percent of women in the board of directors are found to have no effect on firm performance when it is measured by Tobin's Q, but are found to have a significant negative effect on firm performance when measured by return on assets. Moreover, private ownership is found to have no moderating effect on Tobin's Q, but a positive moderating effect on return on assets.

List of contents

1. Introduction

The composition of boards of directors is under increasing pressure since the importance of diversity is gaining more attention recently. This variety in the board's composition can be measured based on, for example, gender, age, ethnicity and experience (Campbell & Mínguez-Vera, 2008). The variety of gender in boards of firms is the most debated topic, and is the type of variety focused on in this research. Many worldwide proposals for governance reform have argued for gender diversity improving board effectiveness and thus have argued for more gender diverse boards (Adams & Ferreira, 2009; Higgs, 2003; Tyson, 2003). Even though the number of women holding board of directors' positions is increasing, the presence of women in boardroom positions is not uniform across large firms around the world (Hillman, Shropshire & Cannella, 2007). Moreover, in line with the increased attention on the importance of gender diversity and the resulting proposals for governance reform, the amount of research on gender diversity in boardroom positions is increasing over the last couple of years (Campbell & Mínguez-Vera, 2008). Several factors, like board inputs, being director attendance and committee assignments, and corporate performance, which could be influenced by the variance in gender diversity in the boards of firms, are investigated (Adams & Ferreira, 2009).

Firm performance is a factor that has been investigated extensively. However, in the research on the influence of board gender diversity on firm performance, a contradiction is observed. While in some research there is argued for a positive relation between gender diversity in the boardroom and firm performance, in other research there is argued for a negative relation between the two factors. Even though there is no agreement on the empirical evidence found of the effects of gender diversity in firms' boards, several countries have introduced gender quotas to increase the presence of women on board positions. The government of Norway, for example, has introduced a gender quota in 2008 of 40 per cent for the board positions of each listed firm (Adams & Ferreira, 2009). Other European counties, like Spain, Italy and Belgium, have also imposed gender quotas for boards (Daunfeldt & Rudholm, 2012).

While the gender quotas for boardroom positions already have been imposed, there exists contradictory and rather ambiguous empirical evidence on the effects of gender diversity in the boardroom on firm performance. Understanding these effects is essential in determining the desirability of gender diversity in or the introduction of gender quotas of firms' boards elsewhere in the world, if there is aimed for the best composition of boards. If the by European governments assumed positive effects of gender diverse boards, resulting amongst others from the addition of different perspectives and experiences (Hillman et al., 2007), are known and acknowledged by firms, imposing a gender quota might not even be necessary. If the positive effects of gender diversity in boardrooms are, if found, not acknowledged, only tokenism exists (Brancato & Patterson, 1999). The lack of women holding positions in the board of directors results in women being "tokens" in the board of directors (Kanter, 1977). Due to this token status, the impact of a lone woman on the decisions made by the board of directors might be limited (Liu, Wei & Xie 2014). So even if the effects of women holding positions in the board of

directors are positive, these effects might not show off due to the token status women have in the board of directors. This token status of women is related to the ethical arguments to increase board gender diversity. The ethical arguments for female participation in boards are based on the underrepresentation of women in general, and on underrepresentation in business and boardrooms in particular (Campbell & Mínguez-Vera, 2008). These ethical arguments value greater female representation as an end in itself (Brammer, Millington & Pavelin, 2007).

However, more of importance for this research are the economic arguments, which are based on the idea that firms failing to select the most capable directors face worse financial performances (Campbell & Mínguez-Vera, 2008).

Next to the fact that the evidence found in existing research on the influence of gender diversity on firm performance is contradictory, previous research is mainly focused on firms in the United States. Where research on this topic based on European firms is increasing, the research based on Asian countries is relatively small (Carter, D'Souza, Simkins and Simpson, 2010). Because of the differences between countries, for example differences in legislation related to corporate governance, cultural environments, or the strength of corporate governance, the results of earlier studies do not necessarily hold for other countries. The differences in the found effects of board gender diversity on firm performance are linked to the used data, which is originated in different countries in different studies. However, different time periods or different measures of firm performance are also mentioned as causes of the different results found in studies on gender diversity and firm performance (Joecks, Pull, & Vetter, 2013). Performing multi-country studies on the influence of board diversity, including gender diversity, on firm performance will increase the understanding of board diversity substantially (Carter et al., 2010). Based on this statement, and the small amount of research on gender diversity and its influence on firm performance in Asian countries, this research focuses on China. China differs for example in its level of strength of corporate governance from the United States and other developed economies, which is one of the reasons why the findings of earlier research conducted in other countries do not necessarily hold for China (Allen, Qian, Qian, 2005).

Based on the greatly varying results of research on board gender diversity and its effects on firm performance, several researchers suggest to examine moderating or intervening variables of the relation between board gender diversity and firm performance. This is suggested to show whether and in what way board gender diversity influences firm performance (Kochan et al., 2003; Miller & del Carmen Triana, 2009). For Chinese firms, which have relatively unique ownership structures, the type of ownership is suggested to have an influence on the effect of board gender diversity on firm performance (Liu et al., 2014). This implies that the type of ownership could be considered as a moderating or intervening variable. The structures of the ownerships that are suggested to be a moderating or intervening variable in the relation between board gender diversity and firm performance, have changed majorly by the listing of non-state-owned firms (McGuinness, Vieito & Wang, 2017). Before 2000, relatively few private listed firms existed in China. However, from 2000 till 2008, private listed firms

emerged more and more. By 2008, the amount of privately held listed firms almost equaled the amount of state-controlled listed firms. In recent times, no other market has experienced such a drastic change as this change in China (Lam, McGuinness & Vieito, 2013). In more or less the same period as the listing of non-state owned firms, the Chinese government promoted corporate social responsibility (CSR), which has coincided with an increase in the representation of females in the boards of Chinese listed firms (McGuinness et al., 2017). This promotion of corporate social responsibility has apparently intensified in the aftermath of the global financial crisis of 2007-2008 (González & Martinez, 2004). Moreover, as non-state owned firms support and promote female leaders more, the listing of non-state owned firms is suggested to increase female board participation in listed Chinese firms even more (McGuinness et al., 2017).

The surge in female representation in boards over time is visible in data used in existing research and obtained from Chinese listed firms, and is interesting to study since more women are in board positions than before, which may have changed their influence on firm performance. The gender diversity within the boards of Chinese firms has shown improvement over recent years. For example, at the aggregate level, the number of women holding board positions in 2001 is lower than 1000, while this number exceeds 3000 in 2012. Moreover, the percentage of women holding board positions has also increased from about 9 percent in 1999 to about 12 percent in 2012 (Li & Chen, 2018). The surge in the representation of women on boards is also visible in the data used for this research and is depicted in figure 1. Based on this dataset, the average board gender diversity of Chinese listed firms has increased from about 27 percent in 2008, to about 37 percent in 2017. This number differs from the percent of women found by Li and Chen (2018), and may be due to differences in the data sample used to measure the development of board gender diversity over time.
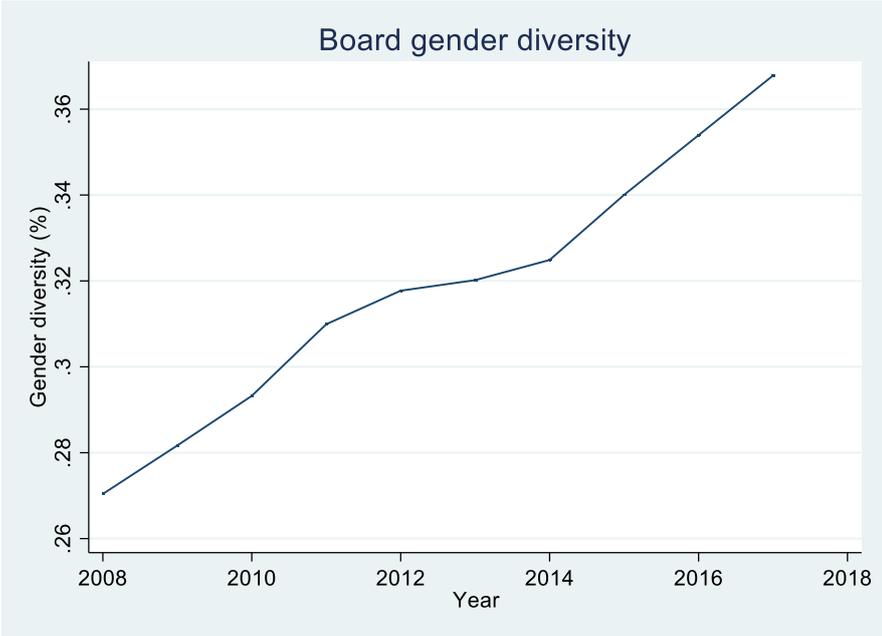

Figure 1. Board gender diversity of Chinese listed firms during the period of 2008-2017

Even though the increase in female representation in boards is visible, the main interest of this research is in its relation to firm performance and type of ownership. Studying this relation for the period after the promotion of corporate social responsibility and the listing of non-state owned firms, will possibly lead to different results regarding the coefficients of the variables of interest and significance of these variables than the study of Liu et al. (2014), in which board gender diversity and its effect on firm performance and the influence of state ownership on this effect is investigated. The study examines these effects for Chinese listed firms from 1999 to 2011, which includes only three years of the period in which female presence in boards has increased. This is why in this research a time frame of ten years ranging from 2008 to 2017 is used, in which the increase in female representation in the boards of directors of firms is likely to be captured more than in the research of Liu et al. (2014).

The research question examined in this research is as follows: 'How is the relation between board gender diversity and firm performance influenced by the type of ownership of a firm?'. The aim of this research is gaining insight in and contributing to the existing literature on the effects of the presence of women in the boards of firms on firm performance. There is contributed to the literature on the business case for the presence of women in board positions. Further, this research contributes to the existing but limited number of research on relation between board gender diversity and firm performance in China. Previous studies are mainly focused on developed countries, which is why the examining of a developing country is a contribution to existing empirical evidence. An extra dimension is added by examining the moderating effect of ownership in this relation. Moreover, as the sample of this research consists of listed Chinese firms, the evidence found in this research could potentially serve as guidance for these Chinese firms.

Panel data analysis combined with fixed effects regression is used to analyse the relationship between board gender diversity and firm performance, and the effects of the type of ownership of the firm on this relation. Depending on which performance measure is used as dependent variable, different results are found. Board gender diversity is found to have no effect on firm performance, when Tobin's Q is used as performance measure. However, the relationship between board gender diversity and firm performance is found to be negative when return on assets is the measure of firm performance. These findings are actually contradicting to what is expected. The type of ownership is found to have a significant positive effect on the relation between board gender diversity and firm performance (when measured by return on assets), which is as expected. Moreover, since board composition and firm performance are argued to be endogenous, a causality test is performed to assure that the relation between board gender diversity and firm performance is a one-way relation (Hermalin & Weisbach, 1998, 2003). This one-way relation is one in which board gender diversity influences firm performance but in which firm performance has no influence on the gender diversity of a board. The causality test finds no evidence for firm performance influencing board gender diversity.

The remainder of this paper is organised as follows. Section two presents an overview of the existing and most relevant literature on the topic of gender diversity in boardrooms, its relation with firm performance and the potential moderating influence of ownership on this relation. Moreover, elaborating on this literature review, hypotheses are formulated in section two. Section three contains the underlying methodological approach and elaborates on the method used to answer the research question. Further, this section focuses on the data needed to perform the regression analyses necessary to find empirical results. Section four presents and discusses the empirical results found. Finally, section five concludes and discusses the limitations of this research.

2. Literature review

In this section, current literature on the topic of board gender diversity and firm performance and its relationship with the type of ownership of a firm are discussed and contrasted. Based on this literature review, two hypotheses are formulated.

2.1 The board of directors

The board of directors of a firm has at least four important functions to fulfill, consisting of the monitoring and controlling of managers, the providing of information and advice to managers, the monitoring of the compliance with legislation and regulation and linking the firm to the external environment (Mallin, 2004; Monks & Minow, 2004). The way in which these functions are performed, partially determines firm performance. In turn, the performance of these functions is influenced by the composition of the board. This implies that the composition of the board, including the diversity in gender as the specific composition of interest in this paper, partially influences firm performance (Carter, Simkins & Simpson, 2003).

From these four important functions, the monitoring function of the board of directors, is a corporate governance control mechanism which has gained attention and is most discussed in research over the last couple of years (Campbell & Mínguez-Vera 2008). This monitoring and controlling role of the board of directors is ought to ensure that managers act in the best interest of the firms' shareholders and mitigates conflicts of interest (Fama & Jensen, 1983; Liu et al., 2014). Agency problems between the management and shareholders of the firm, due to their different interests, can be mitigated by the board of directors through monitoring and controlling of the managers by the board of the firm (Fauzi & Locke, 2012) The effectiveness of the monitoring and controlling role of the board is dependent on factors like experience of the board members, involvement in multiple directorships and the type of remuneration.

Another factor is the ratio of women to men in the boardroom, which can influence the quality of the monitoring role of the board of a firm and thus can influence the financial performance of the firm. More diverse, and thus also more gender diverse boards, are suggested to fulfill the monitoring and controlling function better than less diverse boards. This is suggested to be due to the fact that more diverse boards often are more independent, in which directors are less beholden to managers, resulting in better monitoring and controlling (Carleton, Nelson & Weisbach, 1998; Carter et al., 2003). Moreover, more diverse boards are better balanced in that no single director can dominate the decision-making process (Hampel, 1998). Further, gender diverse boards are argued to put more effort in the monitoring role of the board because women are more likely to hold a monitoring-related position, through which amongst others board attendance is promoted (Adams & Ferreira, 2009). Other empirical research confirms this and shows that female directors tend to be more active in their monitoring role than male directors (Liu et al., 2014).

Another important function of the board of directors is providing information to and advising managers. An increase in female representation in boards of directors is argued to add additional perspectives, which are different form the perspectives of male, to the board of directors (Fauzi & Locke, 2012). More different perspectives may improve the quality of the information and advice the board of directors provides to the managers of the specific firm. Since more perspectives exist in the board of directors, there are more perspectives available to be the best one.

The third important function of the board of directors, being the monitoring of the compliance with legislation and regulation. This function is linked to the most important function, the monitoring and controlling of managers, in that both functions consist (partly) of monitoring. As mentioned before, women put more effort in monitoring and are more likely to hold a position related to monitoring than men (Adams & Ferreira, 2009). This implies that gender diverse boards are better monitors, and thus monitor the compliance with legislation and regulation better than less gender diverse boards.

The fourth function, linking the firm to the external environment, can be linked to resource dependency theory, in which a firm is described as an open system that is dependent on contingencies originating in the external environment of the firm (Pfeffer & Salancik, 1978). Resource dependency theory focusses on board size and board composition, of which the latter is at interest in this research. Board composition is used as an indication of the ability of the board to provide critical resources (Hillman, Withers & Collins, 2009). Arguing from a resource dependency viewpoint, more diverse boards may provide more linkages to additional resources (Keasy, Thompson, & Wright, 1997). This point is also suggested by Hillman, Cannella and Paetzold (2000), who argue that different types of directors provide different resources to firms. This implies that the board more effective in its functioning due to the provision of more valuable resources, which results in better firm performance (Carter et al., 2010).

2.2 Board gender diversity

As mentioned before, the composition of the board of directors, indirectly influences firm performance through its effectiveness of the functions it is ought to perform. Existing empirical research, examining the influence of the compositions of the board of directors, focussed on the composition of gender, on firm performance has shown contradicting results. Where some research finds evidence for a positive relationship between board gender diversity and firm performance, other research finds evidence for a negative relationship between the two factors. Moreover, empirical evidence for no relationship between the two factors is also found.

In general, the arguments arguing for a positive relationship are based on the view that the gender composition of the board affects firm financial performance positively, and are part of the so-called "business case", which argues for the participation of women in the boards of firms. According to Adams and Ferreira (2009), the introduction of gender quotas in several countries is based on the assumption that women affect the governance of firms positively. Next to the arguments discussed

before about the positive influence of board gender diversity on the functioning of specific roles of the board of directors, several other, more general, arguments exist for a positive relationship between board gender diversity and firm performance. For example, the presence of women in the board of directors is argued to increase the number of different perspectives and experiences in the board, which results in an enhancement of the decisions made by the board (Campbell & Mínguez-Vera, 2008; Hillman et al., 2007). Empirical research also shows that female directors are more cautious than men in making decisions (Huang & Kisgen, 2013; Levi, Li & Zhang, 2014). Next to this, gender diversity in the boards of firms is suggested to lead to higher quality board discussions and a better oversight of the firm's disclosures and reports (Gul, Srinidhi & Ng, 2011).

Amongst actual empirical research examining board gender diversity and firm performance, Campbell and Mínguez-Vera (2008) find a positive relation between board gender diversity and firm value. However, this relationship only holds if board gender diversity is measured by the percentage of women. The presence of one or more women on the board is found to have no significant effect on firm value. The research by Campbell and Mínguez-Vera (2008) is based on firms in Spain, where the participation of women in the workforce used to be very low. The laws in Spain originate in the civil law system, which may be the best comparable law system to that of China. Even though China is still a socialist country, it is approaching the civil law system as more and more civil rights have been recognized in Chinese legislation (Zhang, 2016). This is the reason why results of research conducted in countries with civil law systems may be more applicable to China than research conducted in countries with common law systems.

Carter et al. (2003) also find a significant positive relation between the presence of women on the board and firm performance. More diverse boards, so also more gender diverse boards, are suggested to serve their monitoring function better because of increased board independence because of the diversity (Carter et al., 2003). This research is based on Fortune 1000 firms. As the legal system of the United States is a common law system, the results research seems, at first, to be less usable than the former research finding a positive relationship between board gender diversity and firm performance. Moreover, the findings of earlier research do not necessarily hold for China because of the weaker corporate governance of China when compared to that in the United-States (Allen et al., 2005).

However, contrary to the arguments discussed before, arguments for a negative relation between board gender diversity and firm performance exist next to the arguments for a positive relation between the two factors. Heterogeneous groups in general, and thus gender-diverse groups in particular, tend to communicate less frequent than homogeneous groups, because the likelihood of shared opinions is lower (Earley & Mosakowski, 2000). Moreover, heterogeneous groups are less cooperative, have more emotional conflicts and spend more time on making decisions (Lau & Murnighan, 1998; Tajfel & Turner, 1986; Williams & O'Reilly, 1998). Further, Almazan and Suarez (2003) argue that too much board monitoring, as performed more by women than by men, can result in decreased shareholder value.

So when board gender diversity increases, firm performance may decrease because of the higher level of board monitoring (Adams & Ferreira, 2009).

Contrary to the empirical research finding a positive relationship between board gender diversity and firm performance, empirical research that finds a negative relationship between the two exists. Adams and Ferreira (2009) actually find the mechanism of too much monitoring leading to worse firm performance in their research. The average effect of board gender diversity on firm performance is found to be negative for a sample of firms from the United-States. They argue that their results, as stated above, suggest that gender quotas for boardroom positions can have a negative effect on firm value and operating performance for well-governed firms. They state that, at first, it seems to be that there exists a positive relation between gender diversity and firm value or operating performance. However, when omitted variables are dealt with and reverse causality problems are solved, the positive relation disappears (Adams & Ferreira, 2009). So, in the case of the positive relationship between board gender diversity and firm performance found, this is suggested to be the result of methodological issues. However, this seems to be not always a correct explanation for positive relationships found between board gender diversity and firm performance. For example, in the research by Campbell and Mínguez-Vera (2008), where a positive relationship is found, a fixed effects model is used to control for omitted variables. Moreover, since the Hausman test performed appears to be significant, the fixed effect model is the correct model to use in this case. Even though this research is not conducted in the same country and setting, it is an example of the largely used statistical method in research on board gender diversity and firm performance, where is controlled for omitted variables.

Some research does not find a relationship between board gender diversity and firm performance at all. In the research by Carter et al. (2010) for example, no significant relationship between board gender diversity and financial performance, measured by Tobin's Q, for a sample of major corporations form the United-States is found. In a fixed effects regression, some evidence is found for a positive relationship between board gender diversity and firm performance measured by return on assets. However, when causality is taken into account, no evidence for a relation, either positive of negative, is found.

Several reasons for finding no relation between board gender diversity and firm performance are provided. Consistent with social psychology theory, the positive and negative effects of board gender diversity on firm performance may have cancelled each other out in this case. As argued, the increase in innovation and creativity due to more gender diverse boards might be offset by group conflict. Moreover, the effect of gender diversity on firm performance may be positive, negative or neutral due to unique circumstances at the time. Over time and many firms, some periods of a positive effect may be cancelled out by periods of a negative influence of gender diversity on firm performance. Next to this, other countries have other factors influencing board diversity, leading to different results. To summarize, different time periods and different firms or countries can greatly influence the results of research on board gender diversity and firm performance (Carter et al., 2010).

2.3 Ownership

No clear theoretical explanation for the differences between the findings of earlier research on board gender diversity and firm performance exists. As findings in existing research are contradictory and mainly focused on United-States and European firms, investigating countries with different factors, like laws or cultural environments, influencing this relation, will greatly increase the understanding of board diversity and its effects (Carter et al., 2010). This may reveal factors that moderate the relationship between board gender diversity and firm performance, serving as a cause for the different relationships found between the two in earlier empirical research (Kochan et al., 2003; Miller & del Carmen Triana, 2009).

The strength of corporate governance is one of these factors that differs between countries. Corporate governance in China, and in Chinese listed firms in particular, is significantly weaker than in the United-States and other developed countries (Allen et al., 2005). Moreover, as stated by Liu et al. (2014), the majority of the listed firms' ownership structures in China are relatively unique. Many Chinese listed firms are privatized former state-owned enterprises, also called SOEs. These firms are either controlled by state owners or legal person owners (Liu et al., 2014). The privatization of the former state-owned enterprises took place during the process of economic restructuring of China that started in the late 1970s. During this reform process, concepts and "best practices" from the United States and other capitalist countries such as Australia and the United Kingdom have been adapted. Despite this adaption of corporate governance practices, the effectiveness of these practices in China is not fully determined (Chen, Firth, Gao & Rui, 2006).

In studying the effectiveness of these corporate governance practices in China, Chen et al. (2006) argue that a difference exists between the primary motives of the controlling owners of the firms. Firms owned by legal entities tend to be more focused on profits, while firms that are state owned have both economic and political motives. Moreover, the effect of board gender diversity is found to have a significant positive effect in legal-person controlled firms, while there is an insignificant effect found in state-controlled firms in China (Liu et al., 2014). The fact that firms owned by legal entities are argued to focus more on profits may be a cause of the difference in the found effects of board gender diversity in legally owned and privately owned firms. By focussing on profits, the firms owned by legal entities might hire the most capable individuals for a position in the board of directors, which results in a positive relation between board gender diversity and firm performance. Since state-owned firms are, next to economic motives, also driven by political motives, these firms might hire women for board of director positions based on political or ethical motives while economically speaking not being the most capable ones.

2.4 Hypothesis formation

Based on the literature review presented above, two hypotheses are formulated. First, considering the relation between board gender diversity and firm performance, no direct relation between the two factors

is suggested by theories about the functioning of the board. However, as board diversity increases the effectiveness of the functioning of the board of directors due to several factors, the arguments are highly suggestive of a positive relationship. Moreover, empirical research of, amongst others, Carter et al. (2003), Campbell and Mínguez-Vera (2008) and Liu et al. (2014), find a positive relationship between board gender diversity and firm performance. Contrary, research finding a negative relationship between the two factors exists in which there is argued from the perspective that the positive relationship found is due to methodological issues (Adams & Ferreira, 2009). However, the research by Campbell and Mínguez-Vera (2008) controls also for these methodological issues and still a positive relationship is found. Moreover, just like in the research by Adams and Ferreira (2007), a fixed effects model is used controlling for unobserved heterogeneity.

Based on the fact that the corporate governance of China has adapted 'western' corporate governance practices (Chen et al., 2006), research on board gender diversity and firm performance conducted in these 'western' countries might serve as a guideline for the expectations on this topic in China. Next to this, research conducted in countries with civil law systems seem to be more applicable to China than research conducted in common law countries. However, as both western and non-western research, and research in civil law and common law countries show contradicting results for the relationship between board gender diversity and firm performance, this can not serve as a main baseline for the expectations for China.

In research based on Chinese firms there is also a positive relationship between board gender diversity and firm performance found (Liu et al., 2014). So even though the findings in research on board gender diversity and firm performance are contradictory, arguments for a positive relationship are considered the most convincing. The expectation of a positive relation between board gender diversity and firm performance is formulated in the following hypothesis:

H1: The relationship between the ratio of women to men in the board of directors and firm performance is positive.

The second hypothesis is based on the interaction that is expected between board gender diversity and the type of ownership of a particular firm. There is expected that the effect of board gender diversity is positively influenced if a firm is owned by a non-state legal entity. Firms owned by non-state legal persons focus in general more on profit, firm value and monitoring activities, while state-owned firms tend to focus on political, social and economic goals (Chen et al., 2006). As non-state legal-entity owned firms usually are more focused on the factors contributing to firm performance, while state-owned firms also aim for other goals, the effect of board gender diversity on firm performance is expected to be larger for firms with legal entity ownership. The second hypothesis is as follows:

H2: The relationship between the ratio of women to men in the board of directors and   firm performance is positively influenced by non-state legal entity ownership.

3. Research design

In this section, the dependent, independent and control variables used in this research and used to run regressions to test the hypotheses are operationalised. Moreover, the sample, the data obtained and the data source, the China Stock Market & Accounting Research Database, used to obtain this data are discussed. Finally, the regression model is estimated and the statistical methods and the test for causality are discussed.

3.1 Methodology and data

To perform the analysis of this research, financial and board composition data of all listed firms in China for the period from 2008 to 2017 is obtained. The initial sample consists of all listed firms on the Shanghai and Shenzhen Stock Exchanges for the period 2008-2017. This time frame is chosen because of the rise in promotion of corporate social responsibility by the Chinese government, which started around 2007 and which has resulted in an increase in female presence in the board of directors (McGuinness et al., 2017). Moreover, the Chinese state ownership reform, which was completed around the year 2007, caused the closing of the big pricing gaps between tradable and non-tradable shares (Liu et al., 2014). Due to this, Tobin's Q can be used as a measure of firm performance, just as in many existing research on gender diversity and firm performance in other countries than China. Further, it is interesting to examine the recent developments related to board gender diversity and the resulting effects on firm performance. The data source used to obtain the board-level and firm financial data for the Chinese listed companies is the China Stock Market & Accounting Research Database, hereafter the CSMAR-database. The CSMAR-database contains data on all listed firms on the Shanghai Stock Exchange and the Shenzen Stock exchange.

Some adjustments were made to the raw data. First, for some firms, data on only a few of the variables was available. The observations that contained data on only total assets and leverage, and observations that contained data on only gender diversity and board size have been deleted. Further, for the variables gender diversity and state ownership, which are measured in percentages, all observations above 100 percent are deleted. Theoretically, these variables could not be above 100 percent. However, as there were some above 100 percent, these are deleted. The cause of the variables being above 100 percent may be that there is some error in the data from the CSMAR-database. However, the number of observations deleted for the variable gender diversity is only 95, which is a small number compared to the total number of observations of more than 23,000. The number of observations deleted for the variable state ownership is higher, being 1,440, but is still a relatively small number compared to the total number of observations.

To avoid the influence of extreme observations, all variables are winsorized at the 1 percent and 99 percent percentiles. Finally, to obtain a more balanced panel, firm-year observations with missing values for return on assets and Tobin's Q have been replaced by the mean value of the variables of interest of the whole sample. However, the number of missing observations was around 40 for Tobin's

Q and around 200 for return on assets. This is a small number in relation to the total number of observations, and is thought to have a negligible influence on the results of the regression analysis. For the other variables of the regression model, no missings or less than five missings existed and thus these were not replaced by the mean value of the variables. The final sample, after adjustments, consists of 23,521 observations for 3,464 unique Chinese listed firms for the time period from 2008 to 2017. The final sample consists of an unbalanced panel, which indicates that there are some listwise missing observations in the data. This implies that not for all firms data on all years of the whole time period is available.

3.2 Dependent variable

The dependent variable examined in this research is firm performance and is calculated by two different measures. The primary measure to represent firm performance in this research is Tobin's Q. This measure of firm performance is used in many existing research on board gender diversity and its effect on firm performance (Adams & Ferreira, 2009; Campbell & Mínguez-Vera, 2008; Carter et al., 2003). The original definition of Tobin's Q is equal to the ratio of market value to replacement cost (Tobin, 1969). Existing research often defines Tobin's Q slightly different, but still an approximation of Tobin's Q is used to measure firm performance. As the majority of the research on gender diversity and firm performance uses the approximation of Tobin's Q, it is more or less straightforward to use Tobin's Q as primary measure for firm performance. Moreover, it is argued to be a better firm performance measure than other used measures, because of its reflections of the market's expectations of future earnings (Li & Chen, 2018; Montgomery & Wernerfelt, 1988).

However, even though the majority of existing research uses Tobin's Q as measure of firm performance, in the existing, but limited, research on board gender diversity and firm performance of Chinese firms, Tobin's Q is not always used as a performance measure. Tobin's Q is not considered as a proper measure of firm performance because of the fact that there existed big pricing gaps between tradable and non-tradable shares of Chinese firms, which would result in an incorrect reflection of firm performance by Tobin's Q. These pricing gaps existed mainly in state-owned enterprises, which is the origin of most Chinese listed firms. For these state-owned enterprises, the majority of shares is not tradable in the secondary market. Since non-tradable shareholders acquired their shares at prices significantly lower than initial public offering prices, this resulted in big pricing gaps (Liu et al., 2014).

However, due to the more recent Chinese state ownership reform, these pricing gaps are no problem anymore for measuring firm performance by Tobin's Q. This ownership reform has started in 2005, and consisted of Chinese listed firms converting their non-tradables into tradables, and is completed by 2007 (Liu et al., 2014). So, implicitly, for time periods after 2007, Tobin's Q can be used as a measure of firm performance. This argument is confirmed by a recent research on board gender diversity and firm performance in China using Tobin's Q as performance measure (Li & Chen, 2018). Following this argument, and the fact that Tobin's Q is widely used in other non-Chinese research,

Tobin's Q is used as primary performance measure in this research. Following Campbell and Mínguez-Vera (2008), Tobin's Q is calculated by dividing the sum of the market value of stock and the book value of debt by the book value of total assets. This definition corresponds to Tobin's Q C in the CSMAR-database.

Next to Tobin's Q as a measure for firm performance, return on assets is also commonly used as a measure for firm performance, and for robustness checks. Carter et al. (2010), for example, use next to the approximation of Tobin's Q, return on assets as a measure of firm performance in research on board gender diversity and firm performance. Since return on assets is also used as a measure of firm performance in some research, return on assets is used as dependent variable for robustness checks (Liu et al., 2014). Next to the fact that several studies use return on assets, return on assets is a reliable measure for robustness checks since Tobin's Q and return on assets are shown to be related statistically (Carter et al., 2003). Return on assets is equal to profits plus financial expenses divided by total assets and corresponds to return on assets A in the CSMAR-database.

However, even though Tobin's Q and return on assets are commonly used measures of firm performance, these are no interchangeable or identical measures. Both measure a different aspect of firm performance. The approximations of Tobin's Q used in existing research, and so in this research, on firm performance often use Chung and Pruitt's (1994) approximation which is generally the market value of issued securities divided by the book value of total assets. Where Tobin's Q is a market-based measure, return on assets is an accounting-based measure. Since Tobin's Q is market based, it provides a forecast of future cash flows generated by the firm. In general, Tobin's Q measures wealth. On the other hand, return on assets is an indication of accounting income produced for the firms' shareholders. In general, return on assets measures income (Carter et al., 2010).

3.3 Independent variables

Board gender diversity is one of the two key independent variables that need to be measured to test the hypotheses and answer the research question. In existing research, different measures are used to measure board gender diversity. The primary measure to capture board gender diversity is the percentage of women on the board. Many existing research use this percentage as only measure or as one of the measures for board gender diversity (Campbell & Mínguez-Vera, 2008; Carter et al., 2003; Liu et al., 2014). Since the majority of existing research on the influence of gender diversity on firm performance includes the ratio of women to the total of members of the board of directors as measure of board gender diversity, this percentage is used as primary measure of gender diversity in this research as well.

Some studies, by Campbell and Mínguez-Vera (2008) and Liu et al. (2014) for example, use a dummy variable as addition or as primary measure for gender diversity. This is also used as the second measure of board gender diversity in this research. Contrary to the use of only dummy being equal to one if one or more women holds a position in the board of directors, as in the research of Campbell and Mínguez-Vera (2008), the critical mass theory is followed. This theory assumes that a critical mass first

needs to be reached before an effect of female directors is visible (Simpson, Carter & D'Souza, 2010). As the critical mass theory states that "one is a token, two is a presence, and three is a voice" (Kristie, 2011), three dummy variables are added to the regression model to test this theory. The first dummy variable is equal to one if one woman holds a position in the board of directors, and is equal to zero otherwise. The second dummy variable equals one if two women hold a position in the board of directors, and equals zero otherwise. Finally, the third dummy variable equals one if three or more women hold a position in the board of directors, and is equal to zero otherwise. Following the critical mass theory, the third dummy variable is expected to be the only board gender diversity dummy variable that has a significant effect on firm performance.

The second key independent variable of this research captures the interaction between board gender diversity and the type of ownership of a firm. Board gender diversity is measured by the percentage of women in the boardroom. The type of ownership, or ownership structure, is a factor that is relatively new in empirical research and relates the type of ownership to board gender diversity and its effect on firm performance. The research by Liu et al. (2014), as mentioned earlier, examines this relationship for Chinese firms. In China, the majority of the listed firms are privatized former state-owned enterprises. These firms are either owned by the state or by legal persons.

Firms are considered to be private when state ownership is equal to or less than five percent (Lam et al., 2013). Following this definition, a dummy variable is added to the regression model which equals one when the percent of state ownership is lower than or equal to five percent. Following Liu et al. (2014), state ownership is measured by the percent of shares owned by governments or state-owned legal persons. Moreover, the number of shares owned by governments or state-owned legal persons is calculated by summing non-negotiable shares and state shares (Liu et al., 2014). To capture the interaction between board gender diversity and the type of ownership, an interaction variable between the gender diversity variable and the ownership dummy is added to the regression model.

3.4 Control variables

Because of the use of a fixed effects model, which is explained below, controls for time invariant firm-level factors are already incorporated in the model. To control for firm-level factors that do vary over time, several control variables are added to the regression model. These control variables can be categorized in firm characteristic variables and board characteristic variables. The category firm characteristic control variables includes firm size and leverage. The category board characteristic control variables includes board size.

Firstly, amongst the firm characteristic control variables, firm size, which is measured by the natural logarithm of year-end total assets, is added to the regression model. In existing research on board gender diversity and firm performance, firm size is a frequently used control variable. Firm size is suggested to directly affect firm financial performance due to economies of scale and market power (Shepherd, 1972). Moreover, following, amongst others, Li and Chen (2018), Liu et al. (2014), and

Campbell and Minguez-Vera (2008), leverage is added to the regression model as a control variable. Leverage is equal to the book value of total debt divided by year-end total assets.

The board characteristic control variable that is added to the regression model is board size. Board size is added as a control variable since it is found to have a negative relationship with Tobin's Q (Yermack, 1996). Following amongst others Liu et al, (2014), board size equals the natural logarithm of the board size, which is calculated by the total number of board members.

3.5 Descriptive statistics

Table 1 depicts the descriptive statistics of the dependent, independent, moderating and control variables as discussed before. Considering the dependent variables, the average value of Tobins's Q is 2.990 and the average return on assets is about 5.5 percent. Since the mean value of Tobin's Q is above 1, on average, the market value of the firm is higher than the book value of total assets (Carter et al., 2010). Compared to other recent existing research in China, by Li and Chen (2018), Tobin's Q seems to be higher than in existing research. This could be due to the use of a different calculation of Tobin's Q. Also, the sample and time period of the research by Li and Chen (2018) is relatively small. Moreover, some adjustments to the data were made that differ from the adjustments made in this research. For example, financial firms, special treatment and particular transfer firms are excluded from the sample in existing research by Li and Chen (2018).

Return on assets of 5.5 percent is also slightly higher than existing research on Chinese listed firms, being 3.2 percent in the research by Liu et al. (2014). However, as existing research is conducted on a different time period, this may cause return on assets to differ by a small amount. The independent variable is measured by board gender diversity (GENDER), and three dummy variables (GENDER1, GENDER2, and GENDER3). The average gender diversity in the boards of the Chinese listed firms is equal to about 32 percent. The control variables are state ownership, firm size, board size and leverage and are named OWNERSHIP, FSIZE, BSIZE and LEVERAGE respectively in the regression model. The mean values of these variables correspond to mean values in existing comparable research of Chinese listed firms (Liu et al., 2014; Li & Chen, 2018). For instance, on average a board consists of 9 or 10 members, and the average ratio of debt to assets is about 46 percent.

Table 1

Descriptive statistics

Variable	Variable name	Mean	Standard deviation	Min	Max	Number of observations
Dependent variable						
	TQ	2.990	3.636	0.661	70.279	23,522

		Mean	SD	Min	Max	N
Firm performance	ROA (%)	5.558	10.699	-189.320	100.572	23,522
Independent variables						
Gender diversity	GENDER (%)	32.41	20.29	0	100	23,522
	GENDER1	0.147	0.354	0	1	23,522
	GENDER2	0.211	0.408	0	1	23,522
	GENDER3	0.585	0.493	0	1	23,522
Control variables						
State ownership	OWN	0.379	0.485	0	1	23,522
Firm size	FSIZE	21.92	1.475	16.584	30.215	23,521
Board size	BSIZE	2.284	0.254	1.61	3.178	23,522
Leverage	LEVERAGE	0.465	0.468	0.016	10.443	23,521

The panel dependent variable presents the descriptive statistics of the firm performance measures. Firm performance is either measured by Tobin's Q, TQ, or by return on assets, ROA, for robustness checks. The panel independent variables presents the descriptive statistics of the board gender diversity measures. GENDER implies the percent of women boardmembers, GENDER1, GENDER2 and GENDER3 equal one if the number of women on the board is one, two, or three or more respectively.

Due to the adjustments that have been made to the data, there are only small differences in the number of observations per variable. Moreover, as a result from the winsorizing, the undue influence of extreme observations is limited. However, the minimum of return on assets (ROA) is remarkable since it is relatively low, and the maximum of Tobin's Q (TQ) is relatively high, which could be the result of outliers. However, since the number of observations is high, and due to the fact that there is already winsorized, this is neglectable. Amongst the standard deviations of the variables, the standard deviations of the variables return on assets (ROA) and the gender diversity variable measured in percent (GEN) are remarkable. These standard deviations are relatively high compared to the mean of the variables. This could be the result of some outliers that still remained after the winsorizing at the 1 percent and 99 percent percentiles. The standard deviations of the other variables are relatively small and thus need no further explanation.

3.6 Regression model and statistical method

Based on the variables discussed before and depicted in Table 1, the following model is estimated:

$$PERF_{it} = \beta_0 + \beta_1 GENDER_{it} + \beta_2 OWN_{it} + \beta_3 FSIZE_{it} + \beta_5 BSIZE_{it} + \beta_6 LEVERAGE +$$
$$\beta_7 GENDER_{it} * OWN_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \qquad (1)$$

Where,

PERF = firm performance

β_0 = constant variable

GENDER = gender diversity

OWN= private ownership

FSIZE = natural logarithm of firm size

BSIZE = natural logarithm of board size

LEVERAGE= leverage

GENDER * OWN= interaction term

α = firm fixed effects

λ = year fixed effects

ε = error variable

   Further, i refers to firm and t refers to time. Primary the dependent variable of this model, firm performance, is measured by an approximation of Tobin's Q (TQ). For robustness checks, the dependent variable of this model, firm performance, is return on assets (ROA) instead of an approximation of Tobin's Q (TQ). Firm fixed effects are added to the model to control for unobservable heterogeneity, and year fixed effects are added to control for economy-wide yearly fluctuations (amongst others, Liu et al., 2014; Li and Chen, 2018).

   In existing research on board gender diversity and firm performance, panel data regression and pooled ordinary least squares, hereafter OLS, are largely used methods of analysis. Panel data regression is a largely used estimation method partly because of its powerful ability to control for unobservable heterogeneity, or firm fixed effects, which is a bias due to omitted time-invariant variables (Campbell & Mínguez-Vera, 2008). To determine the appropriate estimation method, an F-test is performed. This F-test is included in the panel data regressions and tests whether there exists a difference between the intercepts of each firm. The null hypothesis expects that the unobserved heterogeneity does not exist. If the F-test is significant, the fixed effects regression can be used instead of a pooled OLS regression (Li et al., 2014). Since the F-tests is found to be significant at the 1% level for both measures of the dependent variable, being Tobin's Q and return on assets, a panel data regression is used instead of a pooled OLS regression. This is why model (1) includes firm fixed effects.

   By using panel data regression combined with a fixed effects model, there is controlled for the unobservable heterogeneity and thus for all time-invariant firm characteristics. If the unobservable heterogeneity is correlated with the independent variables, a fixed effects panel data regression is performed (Himmelberg, Hubbard & Palia, 1999; Campbell & Mínguez-Vera, 2008). However, when

the unobservable heterogeneity is not correlated with the independent variables, a random effects panel data regression is conducted (Arellano & Bover, 1990).

To test the applicability of the aimed panel data regression combined with firm fixed effects , a Hausman test is performed, which tests whether a fixed effects regression or a random effects regression of the data is desirable and applicable. The Hausman test examines whether there exists a significant difference between the coefficients of the variables in the fixed effects regression and the coefficients of the variables in the random effects regression. If the null hypothesis, which expects the coefficients of the fixed effects model and of the random effects model to be similar, is rejected, only the fixed effects estimation consistent. The Hausman test is used and is found to be highly significant, which implies that the fixed effects regression should be used instead of the random effects regression.

3.7 Causality

Board composition, and thus also the gender composition of the board, and firm performance are argued to be endogenous (Hermalin & Weisbach, 1998, 2003). This implies that female representation in the board of directors may endogenously depend on firm performance, and that the potential relation found between board gender diversity and firm performance is due to reverse causality (Dezso & Ross, 2012) In general, panel data methods do not eliminate problems due to time-varying omitted variables that are correlated with independent variables (Wooldridge, 2012). To assure that the relation between board gender diversity and firm performance is a one-way relation, in which board gender diversity influences firm performance but in which firm performance has no influence on the gender diversity of a board, a causality test is performed. Problems due to reverse causality might arise if for example, when a small number of women is available to fill in a board position, these women possibly choose for the best performing firms (Farell and Hersch, 2005). A causality test gives an answer to the question whether the relation between board gender diversity and firm performance is a one-way or two-way relation. This causality test is performed by means of a Hausman-Wu test for endogeneity. The Hausman-Wu test compares the ordinary estimation with an instrumental variables regression. If the variables appear to be endogenous, the coefficients of the variables of the two-stage least squares or instrumental variables methods need to be used to estimate the relation between board gender diversity and firm performance instead of those of the ordinary least squares method (Gujarati & Porter, 2009).

The instrumental variable constructed to extract exogenous variables of female participation in the board of directors and to test for endogeneity, is the lagged value of the percentage of women present in the board of directors (Arellano & Bover, 1995; Blundell & Bond, 1998; Gregory-Smith, Main & O'Reilly, 2014; Li & Chen, 2018). The instrumental variables is aimed to extract exogenous variables of female participation in the board of directors because it is not clear whether firm performance influences incentives of women to join a specific firm or that firm performance influences the incentives of a firm to hire women as directors (Li & Chen, 2018). The test of causality is conducted by using Two-Stage Least Squares (2SLS), and by performing the Hausman-Wu test. First, to test the validity of the

variable as instrumental variable, the first stage regression is conducted. This first stage regression is also called the reduced form and is a regression of the endogenous explanatory variable, being gender diversity in this case, on all exogenous, also independent, variables and the instrumental variable. As a rule of thumb, a minimum value of the t-statistic of the coefficients of the instrumental variable of 3.3 is used. As the coefficient of the instrumental variable has an absolute t-value of 14.38 which is significant at the 1 percent level, it is considered as a strong instrumental variable. Finally, as a test for endogeneity, the regression of model (1) is conducted using Two-Stage Least Squares in which the instrumental variable for gender diversity is used as independent variable.

As a second method to address the potential endogeneity problem, is to replace board-related variables by one-year lagged variables in the main regression. The influence of female directors and board characteristics is suggested to take time, which is why the lags are added (Liu et al., 2014). For the fixed effects regression of model (1), board gender diversity and board size are replaced by a one-year lag of the same variables.

4. Results

This section discusses and analyses the results found in the fixed effects regression. First, the correlation matrix containing the correlations between the independent variables of interest in this research is given. Secondly, the results of the fixed effects regression, with both Tobin's Q and return on assets as dependent variable and gender diversity measured in percent, are given and discussed. Subsequently, the results of the fixed effects regression with Tobin's Q and return on assets as dependent variable, and gender diversity measured by three dummies are discussed. Finally, the causality test and its results are discussed.

As a check for multicollinearity, Table 2 depicts the correlation matrix of the independent variables used to conduct the regressions and analysis of this research. An absolute correlation of 0.7 or higher is used as an indication of a multicollinearity issue (Liu et al., 2018). The correlation between gender diversity (GEN) and a gender dummy (GEN3), and the correlation between the interaction term (GEN*OWN) and the ownership dummy (OWN) are the only correlations exceeding the absolute value of 0.7. However, the variables of the former correlation are used interchangeable in the regression model, which implies that the high correlation causes no multicollinearity issues for the regression analysis. The correlation between the interaction variable and the ownership dummy are a rather logical consequence, since the interaction variable consists of a multiplication of the ownership dummy and gender diversity. This correlation can not be avoided. Finally, the other correlations are of a relatively small or moderate value. Even though the correlation between the dummies capturing gender diversity measured by the number of women present in the board of directors do not exceed the absolute value of 0.7, these still need some discussion since the correlation between these measures is relatively high. It is rather unavoidable to have correlation between these dummy variables since one of the three dummies can only be one. Automatically, the other two dummies are zero, resulting in some correlation. As the remaining correlations are relatively small, these are not further analysed and assumed to be no issue for the regression analysis and results.

Since the Hausman test is significant at the 1 % level for both Tobin's Q and return on assets as dependent variable, a fixed effects regression of model (1) is performed. The results of the fixed effects regression of model (1), with Tobin's Q as measure of firm performance, are presented in Table 3. In this table, as baseline, the relationship between board gender diversity measured in percent (GENDER), state ownership (OWN), firm size (FSIZE), board size (BSIZE), and leverage (LEVERAGE), and firm performance as measured by Tobin's Q (TQ) is given. For the regression analysis of model (1), the interaction between board gender diversity and private ownership (GENDER*OWN) is added to this baseline model.

As formulated in hypothesis 1, board gender diversity is expected to have a positive effect on firm performance. This implies that a positive coefficient of the board gender diversity variable, being GENDER, is expected.

Table 2

Correlation matrix

		1	2	3	4	5	6	7	8	9
1	GENDER	1.0000								
2	GEN1	-0.4394*	1.0000							
3	GEN2	-0.2715*	-0.2147*	1.0000						
4	GEN3	0.7250*	-0.4922*	-0.6147*	1.0000					
5	GENDER*OWN	0.3257*	-0.1536*	-0.0929*	0.2566*	1.0000				
6	OWN	-0.0784*	0.0314*	0.0052	-0.0426*	0.7690*	1.0000			
7	FSIZE	-0.1140*	0.0113	-0.0177*	-0.0081	0.0820*	0.1826*	1.0000		
8	BSIZE	-0.2200*	-0.0650*	-0.0770*	0.1266*	-0.0006	0.1056*	0.3184*	1.0000	
9	LEVERAGE	-0.0509*	0.0094	0.0071	-0.0242*	0.0689*	0.1035*	0.0828*	0.0760*	1.0000

Note. *, Denotes significance at the 10%, 5%

and 1% levels, respectively

Moreover, as formulated in hypothesis 2, the relation between board gender diversity and firm performance is expected to be positively influenced by non-state legal ownership. This implies that the coefficient of the interaction variable, being GENDER*OWN in Table 3, is expected to be positive.

Table 3

Fixed effects regression of model (1)

TQ	Baseline	Model (1)
GENDER	-0.001	-0.0001
	(0.002)	(0.002)
GENDER*OWN		-0.002
		(0.002)
OWN	0.092*	0.146
	(0.055)	(0.092)
FSIZE	0.007	0.007
	(0.030)	(0.030)
BSIZE	-0.250**	-0.250**
	(0.109)	(0.109)
LEVERAGE	0.206***	0.206***
	(0.054)	(0.054)
No. of observations	23,521	23,521
No. of firms	3,464	3,464
R^2 within	0.0016	0.0016
R^2 between	0.0008	0.0003
R^2 overall	0.0069	0.0074

Note. *, **, *** Denote significance at the 10%, 5%
and 1% levels, respectively.

As can be concluded from the results of the fixed effects regressions as depicted in Table 3, for both the baseline model and model (1), board gender diversity is not found to have a positive effect on firm performance. The coefficient of the variable measuring board gender diversity is rather negative, but insignificant. This implies that no significant effect of board gender diversity on firm performance is found. Based on these results, the first hypothesis of this research is not accepted. There can be argued that the positive effects of board gender diversity are outweighed by the negative effects, resulting in the fact that no effect is found. Not finding any relationship between board gender diversity and firm performance is also the case in the research by for example Carter et al., (2010). Next to the cancelling

out of positive and negative effects, several other reasons are mentioned for why no relationship is found. However, contrary to what is found in this research on Chinese listed firms , two existing studies based on Chinese firms, as discussed earlier, overall find a positive effect of board gender diversity on firm performance (Li & Chen, 2018; Liu et al., 2014). Several other non-Chinese studies also find a positive relation between the two factors (e.g. Campbell & Mínguez-Vera, 2008; Carter et al., 2003). Since these studies are based on a different time period and thus a different sample, this could be a reason for differences in results.

Moreover, the second hypothesis of this research is also not accepted. The coefficient of the interaction variable is found to be negative, while it is expected to be positive. A negative coefficient implies that the effect of board gender diversity on firm performance is reduced by private ownership, which is not as expected. However, as this result is insignificant, there can be concluded that the type of ownership of a firm has no effect on the relation between board gender diversity and firm performance. Even though not entirely comparable due to different methods used, this result is not in accordance to that of previous research, in which a significantly positive effect of board gender diversity on firm performance for firms with no state ownership (Liu et al., 2014). This is more or less comparable to the measure of ownership in this research, which is a dummy equal to one when state ownership is less or equal to five percent. The differences in empirical results might be due to the use of different time periods, methods or samples.

Concerning the control variables, board size (BSIZE) is found to have a significant negative effect on firm performance in both the baseline model and model (1). When comparing the results to the empirical results of existing research, this negative effect is as expected. Recent research on this topic based on Chinese listed firms also finds a negative significant effect of board size on firm performance as measured by Tobin's Q. The found coefficient is even comparable to the one found in this research (Li & Chen, 2018). Other previous empirical research do either find a negative effect (Carter et al., 2003; Yermack, 1996) or no effect of board size on firm performance (Liu et al., 2014). Moreover, firm leverage (LEV) is found to have a highly significant positive effect on firm performance in the baseline model and model (1). However, this positive effect is not as expected, since it appears to be contradicting to existing research, in which leverage is mainly found to have a negative effect on firm performance (e.g. Campbell & Mínguez-Vera, 2008; Li & Chen, 2018; Liu et al., 2014). Some studies find this negative effect to be significant, while others find no significant negative effect. It is rather remarkable that in this research a positive, significant effect of leverage on firm performance is found. A positive effect may indicate that a high level of debt results in more control over insiders by creditors, resulting in a higher firm performance. Moreover, a high level of debt may be related to higher bankruptcy costs, resulting in a decrease of firm performance (Campbell & Mínguez-Vera, 2008). However, as a positive effect is found, the negative effects are outweighed by the positive effects in this research. Considering the variable ownership (OWN), in the baseline model, a significant positive relation between private ownership and firm performance is found. However, this significant relation disappears when the

interaction term is added to the model, which is due to the fact that the interaction term now captures some part of the effect that private ownership has on firm performance. For the other control variables, no significant coefficient, and thus no significant effect on firm performance is found.

The value of the overall R-squared of model (1) in which firm performance is measured by Tobin's Q, is 0.0074. This implies that 0.74 percent of the variance in Tobin's Q is explained by all variables of model (1), which is actually relatively low. The addition of the interaction term has added some explanatory power (7 percent), when comparing the overall R-squared of the baseline model with that of model (1). However, concluding, model (1), with Tobin's Q as dependent variable, has a relatively low goodness of fit and explanatory power.

Table 4

Fixed effects regression of model (1): robustness check dummies

	TQ: Baseline	ROA: Baseline
GEN1	-0.009	-0.410
	(0.118)	(0.436)
GEN2	0.013	-0.819*
	(0.121)	(0.446)
GEN3	-0.036	-0.701
	(0.124)	(0.455)
OWN	0.093*	0.129
	(0.055)	(0.204)
FSIZE	0.007	0.282**
	(0.030)	(0.110)
BSZIE	-0.227**	0.297
	(0.111)	(0.408)
LEVERAGE	0.207***	-0.632***
	(0.054)	(0.199)
No. of observations	23,521	23,521
No. of firms	3,464	3,464
R^2 within	0.0016	0.0015
R^2 between	0.0009	0.0527
R^2 overall	0.0068	0.0104

Note. *, **, *** Denote significance at the 10%, 5% and 1% levels, respectively.

The second measure of board gender diversity consists of the three dummies being one when the number of women in the board is equal to one, two or three or more respectively. The results of the regression of the baseline model and model (1), for both Tobin's Q and return on assets as dependent variable are presented above, in table 4. Considering the three dummy variables, only one significant effect is found. The dummy variable that equals one when the number of women holding a position in the board of directors is equal to two (GEN2), has a significant negative effect on return on assets at the 10 percent level. This result is not in accordance to what was expected. Based on existing literature on critical mass theory, women are expected to have a significant effect on firm performance only when the number of women in the board of directors is three or more (Simpson et al., 2010; Kristie, 2011). However, no significant effect on firm performance is found for the dummy variable that is equal to one if the number is equal to three or more (GEN3). Moreover, a significant, negative effect is found for the dummy that is equal to one when the number of women in the board of directors is equal to two. Building on these results, the critical mass theory is not corroborated. In addition, hypothesis 1, expecting a positive effect of gender diversity on firm performance, is also not corroborated due to the insignificant, and negative results found.

The results of the robustness check, in which firm performance is measured by return on assets as the dependent variable, instead of Tobin's Q, are depicted in table 5. Table 5 depicts the results of the fixed effects regressions of the baseline model and model (1), in which the interaction term is included. Following the hypotheses formulated in section 2, the coefficients of the board gender diversity variable (GEN) and the interaction variable (GEN*OWN) are expected to be positive.

As visible in table 5, for the baseline model, the coefficient of the board gender diversity variable is found to be negative and is found to be significant at the 10 percent level. This indicates that there exists a negative relationship between board gender diversity and firm performance, which deviates from the expectations based on existing literature, as formulated in hypothesis 1. Moreover, it contradicts the results of the primary estimation, where no relationship is found. Following these results, hypothesis 1 can not be corroborated. Moreover, the opposite effect is found to be significant. Probably, the relation between board gender diversity and firm performance in China is different from other countries or the positive effects are outweighed by the negative effects of gender diversity in the firms' boards. However, even though there is an effect found, this effect is relatively small. The coefficient of the board gender diversity variable is equal to -0.012, which implies that if board gender diversity increases with 1 percent, that return on assets decreases with 0.012 percent. Thus, even though there is found a negative effect of board gender diversity on firm performance, this effect is small and deviates by only a small percent from the primary estimation of model (1).

The empirical results of the actual model including the interaction term show also that there exists a significant, negative relation between board gender diversity and firm performance. The coefficient of the variable capturing gender diversity (GENDER) has slightly increased compared to the baseline model, but remains relatively small. Due to the fact that an interaction term is added to the

regression model, the interpretation of the coefficients of the two variables the interaction term consists of change. The coefficients of the two variables actually represent their value when the other variable has a value of zero (Wooldridge, 2012). This implies that when the variable ownership is equal to zero, so when state-owned, the effect of gender diversity on firm performance is significantly negative and equal to -0.020. In turn, when board gender diversity is equal to zero, there exists no significant effect of private ownership on firm performance. So no significant difference exists in firm performance as result of being privately or state-owned.

Table 5

Fixed effects regression of model (1): robustness

check

ROA	Baseline	Model (1)
GENDER	-0.012*	-0.020***
	(0.006)	(0.007)
GENDER*OWN		0.020**
		(0.009)
OWN	0.129	-0.501
	(0.204)	(0.339)
FSIZE	0.303***	0.310***
	(0.110)	(0.110)
BSZIE	0.086	0.081
	(0.401)	(0.401)
LEVERAGE	-0.633***	-0.631***
	(0.199)	(0.120)
No. of observations	23,521	23,521
No. of firms	3,464	3,464
R^2 within	0.0015	0.0018
R^2 between	0.0350	0.0240
R^2 overall	0.0084	0.0073

Note. *, **, *** Denote significance at the 10%, 5%

and 1% levels, respectively.

The interaction between gender diversity and the type of ownership (GEN*OWN) is found to have a positive effect on return on assets, the variable measuring firm performance. Moreover, this effect is found to be significant at the 5 percent level. The coefficient of 0.020 indicates that for private firms,

of which state ownership is equal to or less than 5 percent, the effect of gender diversity on firm performance is 0.020 percent higher than the effect for state-owned firms. This effect is relatively high compared to the individual effect of board gender diversity of absolute value 0.020. . In total, for privately owned firms, no effect of board gender diversity on firm performance is found, because the coefficients of the gender diversity variable and interaction variable cancel each other out. For non-privately owned firms, the effect remains negative. Concluding, private ownership positively influences the relation between board gender diversity and firm performance. Following this finding, hypothesis 2 is corroborated and is thus not rejected. This is not in accordance with the empirical results of the primary estimation, where no effect of the interaction term is found. These differences may be due to the fact that Tobin's Q and return on assets measure different aspects of firm performance.

Considering the control variables of model (1), which are of less interest, firm size and leverage are found to have a significant effect on firm performance. Firm size is found to have a positive effect on firm performance, implying that an increase in firm size, or equivalently in total assets, results in an increase in return on assets. Comparing this effect to the primary estimation results, the effect of firm size has the same sign but is now significant and larger for firm performance measured by return on assets. However, this finding is not consistent with the results of earlier empirical research, where negative effects are found (Campbell & Mínguez-Vera, 2008; Gul et al., 2011; Li & Chen, 2018). Next to firm size, leverage is found to have a negative effect on firm performance, which is significant at the 1 percent level. This contradicts the results of the primary estimation, in which a positive significant effect of leverage is found. However, this found negative effect is in accordance with existing research, in which primarily a negative effect of leverage on firm performance is found (e.g. Campbell & Mínguez-Vera, 2008; Li & Chen, 2018; Liu et al., 2014). The fact that firm size is found to have different effects on firm performance depending on whether performance is measured by Tobin's Q or return on assets, may be due to the fact that both measures capture a different aspect of firm performance, as mentioned earlier.

Finally, the overall R-squared of the fixed effects regression of model (1) with the use of return on assets as dependent variable, is equal to 0.0073, which implies that 0.73 percent of the variance in return on assets is explained by changes in the variables of the model. This implies that the model has a relatively low explanatory power, which is slightly, but negligibly, lower than the explanatory power of the primary estimation of model (1). Remarkably, the value of the overall R-squared has decreased by the addition of the interaction term.

4.1 Causality test results

As mentioned in section 3, a causality test is performed to test for potential unobservable endogeneity. The instrumental variable, being a lagged variable of the gender diversity is found to be a strong instrumental variable. Based on this, the Two-Stage Least Squares regressions, or instrumental variables regressions, are performed. The results of this regression using the lagged value of gender diversity

(L.GEN) as instrumental variable are depicted in Table 6. The null hypothesis of the Hausman-Wu test expects the instrumental variable to be exogenous. For the instrumental variable, the Hausman-Wu test is found to be insignificant, which implies that the null hypothesis can not be rejected and that the variable is exogenous. Concluding, firm performance is not found to have a significant effect on gender diversity. This implies that no causality problems exist in the fixed effects regressions examining the effect of board gender diversity on firm performance, as performed earlier. However, the actual results depicted in table 6, are not consistent with the earlier findings of the robustness check as depicted in table 5. Where the earlier results showed a significant negative coefficient for the variable capturing board gender diversity, the results in table 6 show a significant positive coefficient. Moreover, the coefficient of the interaction term is significantly negative, where it appeared to be significantly positive in earlier results. Compared to the primary estimation, depicted in table 3, with Tobin's Q as dependent variable, the relation between board gender diversity and firm performance is now found to be significantly positive instead of neutral. The coefficient of the interaction term has the same sign as in the primary estimation, being negative, but now is significant which was not the case in the primary estimation.

Table 6

IV regression of model (1): lagged board variables

TQ	L.GEN
GENDER	0.012***
	(0.003)
GENDER*OWN	-0.009***
	(0.003)
OWN	0.107
	(0.116)
FSIZE	-0.792***
	(0.017)
BSIZE	0.184*
	(0.103)
LEVERAGE	1.325***
	(0.051)
No. of observations	19,913
R^2	0.1322
Hausman-Wu (p-value)	0.7008

Note. *, **, *** Denote significance at the 10%, 5%

and 1% levels, respectively.

A second method to address for potential causality problems, is to perform a fixed effects regression with lagged board variables. In this fixed effects regression, the contemporary variables board gender diversity and board size are replaced by a one-year lagged board gender diversity and a one-year lagged board size variable respectively. The results of this fixed effects regression are depicted in table 7.

Table 7

Fixed effects regression of model (1): lagged board characteristics variables

TQ	Model (1)
GENDER	0.0004
	(0.002)
GENDER*OWN	-0.003
	(0.002)
OWN	0.165*
	(0.091)
FSIZE	0.034
	(0.032)
BSIZE	-0.087
	(0.115)
LEVERAGE	-0.019
	(0.057)
No. of observations	19,913
No. of firms	3,076
R^2 within	0.0007
R^2 between	0.2156
R^2 overall	0.0513

Note. *, **, *** Denote significance at the 10%, 5% and 1% levels, respectively.

The first remarkable result is that the only significant effect found is that of the ownership variable on firm performance. Comparing to the primary estimation, one can observe that the sign of the gender diversity variable has changed to a positive sign, which is according to the expectations. However, the

positive relation is found to be insignificant so there can be concluded that no relation is found between board gender diversity and firm performance. Moreover, the sign of the coefficient of the interaction term is, just as in the primary estimation, insignificantly negative. Following the formulation in hypothesis 2, a positive sign was expected, which is why hypothesis 2 is not corroborated. For the remaining control variables, no significant effect on firm performance is found by performing the fixed effects regression with one-year lagged board characteristics variables.

Finally, the R-squared of this version of model (1), with one-year lagged board characteristics variables, has improved when compared to the R-squared of both the primary estimation and robustness check. This implies that due to the change of the board characteristics variables, the variance in the dependent variable, Tobin's Q, is explained better by the changes in this version of model (1). Concluding, the explanatory power has improved.

5. Conclusion

This research contributes to existing empirical research on board gender diversity and firm performance by investigating the influence of the type of ownership on the relation on the relation between board gender diversity and firm performance. The body of literature on the topic of board gender diversity is increasing recently, but has shown contradicting empirical results. Where some research finds a positive relation between board gender diversity and firm performance, others find a negative relation, and others find no relation at all. Moreover, previous research is mainly focused on developed economies in Europe and the United-States. This research focusses on listed firms in China, which results in an important contribution to existing literature by adding empirical evidence on the relation between board gender diversity and firm performance in a developing country.

Since the results of previous empirical research on board gender diversity and firm performance are ambiguous, contextual factors need to be considered when examining the relation between the two factors of interest (Kochan et al., 2003; Miller & del Carmen Triana, 2009). This research focusses on one of the contextual factors, being type of ownership which is considered an intervening factor in the relation between board gender diversity and firm performance (Liu et al., 2014). Firstly, the first hypothesis assumes a positive relationship between board gender diversity and firm performance. The second hypothesis is about the influence of ownership and assumes that non-state ownership influences the relation between board gender diversity and firm performance positively. Both the first and the second hypothesis are not corroborated by the primary estimation, in which no significant result is found for both hypotheses. Referring to existing literature, the positive effects of gender diversity may cancel the negative effects out, resulting in no relationship found (Carter et al., 2010). Considering the results of the robustness check, in which return on assets is the dependent variable, the second first hypothesis is once again not corroborated. Actually, the opposite to what is expected is found: a significant negative effect of board gender diversity on firm performance. However, the second hypothesis is corroborated in the robustness check. However, since this is not the primary estimation, no robust result is found for both the relation between board gender diversity and firm performance, and the effect of non-state ownership on this relation. Concluding, no robust empirical evidence is found for the relation between board gender diversity and firm performance, and for the influence of private ownership on this relation.

This research is subject to several limitations. First, as discussed before, no consistent and robust relation between board gender diversity and firm performance is found. Where no relation is found when firm performance is measured by Tobin's Q, a negative relation is found when return on assets serves as performance measure. The different results depending on what measure is used as a proxy of firm performance may be due to the fact that Tobin's Q and return on assets measure different aspects of firm performance. Tobin's Q in general measures wealth, but return on assets in general measures income. However, both findings are contradictory to what is expected based on the literature and previous

empirical research. Tobin's Q might still be a relatively bad measure for firm performance of Chinese firms, as suggested by Liu et al., (2014). This may be a reason why the actual empirical results do not correspond to what is expected based on the literature. As return on assets is an accounting-based measure which is backward-looking, future research on Chinese firms may employ a new measure to capture firm performance as good as possible. Next to this, future research may investigate if the relation between board gender diversity and firm performance is actually a linear relation. A curvilinear relationship between the two is actually suggested (Barnett, Chadwick, Dwyer & Richard, 2004). However, the majority of previous research does not examine the potential of a curvilinear relation.

Improvement of the regression model used in this research is possible for future research. In previous research on the relationship between board gender diversity and firm performance, more control variables are added to the regression model than in this research are added. Due to time constraints and limited availability of data in the CSMAR-database, no more control variables are added to the regression model. However, the addition of more control variables may have several advantages. Firstly, it may result in a better explanatory power of the model. The actual explanatory power, or goodness of fit, of model (1) is relatively low, and implies that a relatively low percentage of the variance in the dependent variable is explained by changes in the independent variables. This holds for both Tobin's Q as return on assets as measure of firm performance and may be improved by the addition of control variables. Actually, when variables that influence the dependent variable are omitted from the regression model, the actual regression may show distorted results.

The test of causality is also a factor which may be improved in this research. First, only one instrumental variable is used for the test, which may be too little to prove some certain relation. Moreover, since the results of this test do not correspond to the results of the primary estimation, it needs further investigation. Probably, issues with the used variable as instrumental variable exist.

As a final point of attention, it may be said that opportunities for future research on board gender diversity and firm performance are still in the consideration of moderating factors of this relation. No overarching theoretical or empirical explanation exists for the differences found in empirical research. Contextual factors that moderate the relationship between gender diversity and firm performance may reveal why some differences in the results of previous empirical research exist.

6. References

Adams, R.B., & Ferreira, F. (2009). Women in the Boardroom and Their Impact on Governance and Performance. *Journal of Financial Economics, 94*, 291-309.

Allen, F., Qian, J., & Qian, M. (2005). Law, finance and economic growth in China. *Journal of Financial Economics, 77,* 57-116.

Almazan, A., & Suarez, J. (2003). Entrenchment and severance pay in optimal governance structures. *Journal of Finance, 58,* 519-547.

Arellano, M., & Bover, O. (1990). Un Estudio Econométrico Con Datos de Panel. *Investigaciones Económicas, 14*, 3-45.

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error components models. *Journal of Econometrics, 68*(1), 29-51.

Barnett, T., Dwyer, S., Chadwick, K., & Richard, O.C. (2004). Cultural Diversity in Management, Firm Performance, and the Moderating Role of Entrepreneurial Orientation Dimensions. *The Academy of Management Journal, 47*(2), 255-266.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics, 87*(1), 115-143.

Brammer, S., Millington, A., & Pavelin, S. (2007). Gender and Ethnic Diversity Among UK Corporate Boards. *Corporate Governance: An International Review, 15*(2),393-403.

Brancato, C.K., & Patterson, D.J. (1999). *Board diversity in US corporations: Best practices for broadening the profile of corporate boards.* (Report No. 1230-99-RR). Retrieved from the Conference Board website: https://www.conference-board.org/publications /publicationdetail.cfm?publicationid=411.

Campbell, K., & Mínguez-Vera, A., (2008). Gender Diversity in the Boardroom and Firm Financial Performance. *Journal of Business Ethics, 83*, 435-451.

Carleton, W.T., Nelson, J.M., & Weisbach, M.S. (1998). The Influence of Institutions on Corporate Governance through Private Negotiations: Evidence from TIAA-CREF. *Journal of Finance, 53*(4)*,* 1335-1362.

Carter, D.A., D'Souza, F., Simkins, B.J., & Simpson, W.G. (2010). The Gender and Ethnic Diversity of US Boards and Board Committees and Firm Financial Performance. *Corporate Governance: An International Review, 18*(5), 396-414.

Carter, D.A., Simkins, B.J., & Simpson, W.G. (2003). Corporate Governance, Board Diversity, and Firm Value. *The Financial Review, 38*, 33-53.

Chen, G., Firth, M., Gao, D.N., & Rui, O.M. (2006). Ownership structure, corporate governance, and fraud: Evidence from China. *Journal of Corporate Finance, 12*(3), 424-448.

Chung, K.H., & Pruitt, S.W. (1994). A simple approximation of Tobin's Q. *Financial Management, 23*(3), 70-74.

Daunfeldt, S.O., & Rudholm, N. (2012). Does Gender Diversity in the Boardroom Improve Firm Performance? (HUI Working Paper No. 60). Retrieved from HUI Researchwebsite: www.hui.se%2FMediaBinaryLoader.axd%3FMediaArchive_FileI %3D6eb6da15-a8e6-4239-8581ca72573124d0%26FileName%3DHUIwp60.pdf %26MediaArchive_ForceDownload3Dtrue&usg=AOvVaw3UyuQzrD4XNwHqtrhD THd.

Dezso, C.L., & Ross, D.G. (2012). Does female representation in top management improve firm performance? A panel data investigation. *Strategic Management Journal, 33*(9), 1072-1089.

Earley, P.C., & Mosakowski, E. (2000). Creating Hybrid Team Cultures: An Empirical Test of Transnational Team Functioning. *Academy of Management Journal, 43,* 26-49.

Fama, E.F., & Jensen, M.C. (1983). Separation of Ownership and Control. *Journal of Law and Economics, 26*(2), 301-325.

Farell, K.A., & Hersh, P.L. (2005). Additions to Corporate Boards: The Effect of Gender. *Journal of Corporate Finance, 11*(1-2)*,* 85-106.

Fauzi, F., & Locke, S. (2012). Board Structure, Ownership Structure and Firm Performance: A Study Of New Zealand Listed-Firms. *Asian Academy of Management Journal of Accounting and Finance, 8*(2), 43-67.

González, M., & Martinez, C. (2004). Fostering Corporate Social Responsibility Through Public Initiative: From the EU to the Spanish Case. *Journal of Business Ethics, 55*(3), 275-293.

Gregory-Smith, I., Main, B.G., & O'Reilly, C.A. (2014). Appointments, pay and performance in UK boardrooms by gender. *The Economic Journal, 124*(574), F109-F128.

Gujarati, D.N., & Porter, D.C. (2009). *Basic econometrics.* New York: The McGraw-Hill Companies Inc.

Gul, F.A., Srinidhi, B., & Ng, A.C. (2011). Does board gender diversity improve the informativeness of stock prices? *Journal of Accounting and Economics, 51*(3), 314-338.

Hampel, R. (1998). *Committee on corporate governance: Final report.* London: Gee Publishing Ltd.

Hermalin, B.E., & Weisbach, M.S. (1998). Endogenously chosen boards of directors and their monitoring of the CEO. *American Economic Review, 88*, 96-118.

Hermalin, B.E., & Weisbach, M.S. (2003). Boards of directors as an endogenously determined institution: A survey of the economic literature. *FRBNY Economic Policy Review, 9*, 7-26.

Higgs, D. (2003). *Review of the Role and Effectiveness of Non-executive Directors* (Report). Retrieved from ECGI website: http://www.ecgi.org/codes/documents/higgsreport.pdf.

Hillman, A.J., Cannella, J.A.A., & Paetzold, R.I. (2000). The resource dependence role of corporate directors: Strategic adaption of board composition in response to environmental change. *Journal of Management Studies, 37*, 235-255.

Hillman, A.J., Shropshire, C., & Cannella, A.A. (2007). Organizational predictors of women on corporate boards. *Academic Management Journal, 50*(4), 941-952.

Hillman, A.J., Withers, M., & Collins, B.J. (2009). Resource Dependence Theory: A Review. *Journal of Management, 35*(6), 1404-1427.

Himmelberg, C.P., Hubbard, R.G., & Palia, D. (1999). Understanding the Determinants of Managerial Ownership and the Link Between Ownership and Performance. *Journal of Financial Economics, 53*(3), 353-384.

Huang, J., & Kisgen, D. (2013). Gender and Corporate Finance: Are Male Executives Overconfident Relative to Female Executives? *Journal of Financial Economics, 108*(3), 822-839.

Joecks, J., Pull, K., & Vetter, K. (2013). Gender diversity in the boardroom and firm performance: What exactly constitutes a "critical mass"? *Journal of Business Ethics, 118*(1), 61-72.

Kanter, R.M. (1977). *Men and Women of the Corporation.* New York: Basic Books.

Keasy, K., Thompson, R.S., & Wright, M. (1997). *Corporate Governance: economic, management and financial issues.* Oxford: Oxford University Press.

Kochan, T., Bezrukova, K., Ely, R., Jackson, S., Joshi, A., Jehn, K., … Thomas, D. (2003). The effects of diversity on business performance: Report of the diversity research network. *Human Resource Management, 42*(1), 3-21.

Kristie, J. (2011). The power of three. *Dir. Boards, 35*(5), 22-32.

Lam, K.C.K., McGuinness, P.B., & Vieito, J.P. (2013). CEO gender, executive compensation and firm performance in Chinese-listed enterprises. *Pacific-Basin Finance Journal, 21*(1), 1136-1159.

Lau, D.C., & Murnighan, J.K. (1998). Demographic Diversity and Faultlines: The Compositional Dynamics of Organizational Groups. *Academy of Management Review, 23*(2), 325-340.

Levi, M., Li, K., & Zhang, F. (2014). Director Gender and Mergers and Acquisitions. *Journal of Corporate Finance, 28*, 185-200.

Li, H., & Chen, P. (2018). Board gender diversity and firm performance: The moderating role of firm size. *Business ethics: A European Review, 27*(4), 294-308.

Liu, W., Wei, Z., & Xie, F. (2014). Do Women Directors Improve Firm Performance in China? *Journal of Corporate Finance, 28*, 169-184.

Mallin, C.A. (2004). *Corporate governance.* Oxford: Oxford University Press.

Miller, T., & del Carmen Triana, M. (2009). Demographic diversity in the boardroom: Mediators of the board diversity-firm performance relationship. *Journal of Management Studies, 46*(5), 755-786.

Monks, R.A.G., & Minow, N. (2004). *Corporate governance.* Malden, MA: Blackwell Publishing Ltd.

Montgomery, C.A., & Wernerfelt, B. (1988). Diversification, Ricardian rents, and Tobin's Q. *The Rand Journal of Economics, 19*(4), 623-632.

McGuinness, P.B., Vieito, J.P., & Wang, M. (2017). The role of board gender and foreign ownership in the CSR performance of Chinese listed firms. *Journal of Corporate Finance, 42,* 75-99.

Pfeffer, J., & Salancik, G.R. (1978). *The external control of organizations: A resource dependence perspective.* New York: Harper & Row.

Shepherd, W.G. (1972). The elements of market structure. *Review of Economics and Statistics, 54*(1), 25-37.

Simpson, W., Carter, D., & D'Souza, F. (2010). What do we know about women on boards? *Journal of Applied Finance, 20*(2), 27-39.

Tajfel, H., & Turner, J. (1986). The Social Identity of Inter-Group Behavior. In S. Worchel and W. Austin (Eds.), *Psychology and Intergroup Relations* (pp. 7-24). Chicago: Nelson-Hall Publishers.

Tobin, J. (1969). A general equilibrium approach to monetary theory. *Journal of Money, Credit and Banking, 1*(1), 15-29.

Tyson, L. (2003). *The Tyson Report on the Recruitment and Development of Non-executive Directors.* Retrieved from https://www.london.edu/faculty-and-research/academic research/t/tyson-report-on-the-recruitment-and-development-of-nonexecutive-di.

Williams, K., & O'Reilly, C. (1998). Forty Years of Diversity Research: A Review. In B.M. Staw and L.L. Cummings (Eds.), *Research in Organizational Behavior* (pp. 77-140). Greenwich: JAI Press.

Wooldridge, J.M. (2012). *Introductory Econometrics: A Modern Approach.* South-Western: Cengage Learning.

Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of Financial Economics, 40*(2), 185-211.

Zhang, X. (2016). The New Round of Civil Law Codification in China. *University of Bologna Law Review, 1*(1), 106-137.